VEHICLE OPERATING COSTS FOR INPUT TO THE USER BENEFIT PROGRAM

1982 UPDATE

RESEARCH REPORT NO. 20

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SUMMARY AND RECOMMENDATIONS

This paper has updated unit costs for a Highway Priority Program. The survey method has revealed weaknesses, and corrective recommendations result. These are:

1. The telephone survey produces a better response rate than the written survey. However, since many businesses failed to receive the written survey this year, only the telephone interviews are needed.

2. The researcher should have a technical knowledge of the questions being asked. Items to be addressed include:

   (i) 'representative' tires

   Some of those interviewed expressed the opinion that the survey tires were not representative of the sales made. Rather, the sales of those tires tends to be low.

   (ii) truck specifications

   The truck survey caused some confusion, as dealers indicated that the specifications were unrealistic, and not like the trucks they sold.

(iii) Ambiquity realized in 'high/low' grade oil
Due to the number of brands and qualities of oil available in Newfoundland, a clearer definition of high grade/low grade oil must be set. If not, the results will be weakened since what is considered high grade in some regions, may be low in others. Hence, Provincial costs will be unrealistic.

3. Further updates shall make use of the 'other statistics' section to find sources information.

I. INTRODUCTION

This paper is an update of two previously completed reports, and thus it does not detail all procedures. For development of prior research, the reader should consult the earlier studies, which are referred here as:

1. Research Report No. 4
   Nicol, Jane R., December, 1979

2. Update, 1981
   Power, Jeanette M., July, 1981

The purpose of this paper is to revise input information to calculate vehicle operating, travel time, and accident costs for 1982. These calculations will serve as input into the Computerized Priority Analysis Program, as seen in Appendix A. This program is used to prioritize roads in need of capital improvements by comparing pre-project and after-project vehicle operating, travel time, and accident costs.

Appendix A describes the survey as undertaken this year, and evaluates its success. Further updates should be developed in consultation with this guideline.

II. REPRESENTATIVE VEHICLES

As has been the case in previous years, representative passenger vehicles include 4, 6, and 8 cylinder cars and 4 wheel drive vehicles. However, the description for trucks and transports is now more specific, and is given as:

TABLE I

DESCRIPTION OF REPRESENTATIVE TRUCKS

	Single Unit Trucks	Combination Unit
	2 axles, 6 wheels	4 axles, 14 wheels
Curb Weight	4,745 lbs.	25,000 lbs.
Rated GVW	14,000 lbs.	57,000 lbs.
GVW Used	12,000 lbs.	40,000 lbs.
Engine	6-cylinder	6-cylinder
Net Horsepower	145	180
Weight/Power Ratio	82	220

SOURCE: Ontario Ministry of Transportation and Communications, "Road User Benefit Calculation Package," Volume 1, 1976, p. 29.

III. SURVEY RESULTS

Much of the information supplied was obtained through the use of a survey. This survey divided the Province into five districts (see Appendix B), and was sent to a number of businesses. Information asked included:

TABLE II

INFORMATION ASKED TO NUMBERS IN SURVEY

	Information Asked	# Per District
(i)	Unit costs of Gas, Diesel and oil	9
(ii)	Unit cost of Tires	5
(iii)	Unit cost of Mechanic's Labour	5
(iv)	Unit costs of Trucks	3

SOURCE: Survey, 1982.

The results of these four areas will now be addressed.

A. Unit cost of Gasoline, Diesel Fuel and Oil

Table II shows the results of the gasoline survey. The input costs exclude taxes, however, the amounts are included here for the purposes of the user. Please see Appendix C for further information.

The average market share of regular, unleaded and super gasoline is approximately 52.1%, 46.1%, and 1.8% respectively. Due to the negligible number of self-serve stations in Districts II and V, this type has been omitted in these areas.

TABLE III

GASOLINE PRICES FOR AUTOS AND SINGLE UNIT TRUCKS

REGION	AVG. COST/L (Taxes Excluded)	USER/BENEFIT INPUT Avg.Cost/g(Taxes Excluded)
1	.34	1.55
2	.36	1.64
3	.35	1.59
4	.35	1.59
5	.37	1.68

SOURCE: Survey, 1982

Taxes Include:

1. Tax on Gasoline

   Federal 9% on base price

   Provincial 8.5¢ litre

   Excise 1.5¢ litre

2. Tax on Diesel

   Federal 9% on base price

   Provincial 10.1¢ litre

3. Tax on Oil

   Provincial 11% sales tax

These taxes are of June, 1982.

TABLE IV

DIESEL PRICES FOR TRANSPORT TRUCKS

REGION	AVG. COST/L (Taxes Excluded)	USER/BENEFIT INPUT Avg.Cost/g(Taxes Excluded)
1	.37	1.68
2	.36	1.64
3	.36	1.64
4	.37	1.68
5	.34	1.54

SOURCE: Survey, 1982

TABLE V

OIL COSTS: ALL VEHICLES

REGION	AVG. COST/L (Taxes Included)	USER/BENEFIT INPUT Avg.Cost/g(Taxes Included)
1	2.15	2.44
2	1.91	2.17
3	2.00	2.27
4	1.98	2.25
5	2.08	2.36

SOURCE: Survey, 1982

B. User Cost of Tires

The retail price of tires, as shown in Appendix D, was obtained from five retail tire outlets in each of the five districts. Table VI shows Provincial averages. The price of a tire retread is included in the user/benefit cost of tires of a single unit truck, while 2.5 retreads are included in the calculations for transport trucks.

Representative tires are:

1. Size P205/75R14: Passenger Cars
2. Size 800 x 16.5: Single Unit Trucks
3. Size 900 x 20: Transport Trucks

TABLE VI

NEW TIRE COSTS: ALL REGIONS

	New Tire Cost	+Retread	U/B Input Value
Car	75.09	-	75.09
Single Unit Truck	97.38	59.50x1.0	156.88
Transport Truck	207.70	125 x 2.5	520.20

SOURCE: Survey, 1982

C. Unit Cost of Mechanic's Labour

This figure was calculated on the basis of responses from five outlets in each region. The present user/benefit input cost is $23.42 (See Appendix E for further elaboration.)

IV VEHICLE DEPRECIATION VALUE

The depreciation value is calculated by reducing the cost of the representative vehicles by the price of a set of tires. The value assigned to passenger cars was determined as follows:

$$\frac{\text{Total Value of New Cars Bought in Nfld in 1982}}{\text{Total \# of Cars Bought}} = \frac{\$175,245,000}{19,565}$$

$$= \$8956.07$$

The purchase price for the representative trucks and transports was obtained from a survey of truck dealers in the regions. Please see Appendix F for further explanation. The values are:

TABLE VII

VEHICLE DEPRECIATION VALUES

	Price $	Value of Tires	U/B Input Value
Cars	8,957.07	75.09 x 4	8,656.71
S/U Trucks	15,106.50	97.38 x 6	14,522.22
Transport Trucks	80,000.00	207.70 x 14	77,092.20

V. INPUT DATA FOR TRAVEL TIME VALUES

A. Time Costs For Work Trips

1. Travel Time for Work Trips

This value is expressed in dollars/hour/person.

Calculations are:

Average Gross Weekly Wage (1982) = $340.80

Average Weekly Working Hours = 40.2

Travel Time for Work Trips = $\frac{340.80}{40.2}$ = $8.48

2. Travel Time for Non-Work Trips

Estimated personal disposable income per capita (Nfld) 1981 = $5,957.00

Hour Average Personal Disposable Income per capita (Nfld) 1981

7 @ 24 = 168 hours/week

7 @ 8 = 56 hours of sleep

= 40.2 hours of work

= 71.8 hours

$\frac{5,957.00}{71.8 \times 52} = \frac{5,957.00}{3,733.60}$ = $1.60

3. Journey to Work Value

Minimum Hourly Wage = $3.45

4. Calculation of Weighted Travel Time Value for Passenger Cars

Table VIII shows the travel time values for passenger cars, determined by an Origin-Destination Survey as presented in Appendix G.

The following procedures were used to calculate the values of travel time for work trips, travel time for non-work trips, and the journey to work:

(a) Value of Business Time

$$\frac{\text{Average Weekly Wage}}{\text{Average Weekly Hours}} = \frac{340.8}{40.2} = \$8.48$$

(b) Value of Journey to Work = Minimum Wage

= \$3.45

(c) Value of Social Time = hourly average disposable income in Nfld.

= \$1.60

TABLE VIII

TRAVEL TIME PERCENTAGE FOR PASSENGER CARS

	District 1	District 2	District 3	District 4
Work	42%	36%	38%	35%
Pers.Bus.	18%	15%	15%	21%
Social	40%	49%	47%	44%
Mean#Pass	2.42	2.91	2.86	2.63

SOURCE: Origin-Destination Survey

The weighted values for passenger cars are:

District 1 (Figures are hourly)

$3.62 per person/car

$8.76 per passenger car/hour

District 2

$3.29 per person/car

$9.57 per passenger car/hour

District 3

$3.33 per person/car

$9.52 per passenger car/hour

District 4

$3.69 per person

$9.71 per passenger car/hour

VI. TIME COSTS FOR TRUCKS

Time costs for both single unit and transport trucks has been assumed as the driver's average wage. Due to the lack of such information for 1981, figures from July 1980 are used. Please refer to Table IX.

The calculation doubles these values since drivers receive fringe benefits from their employers, earn higher dividends on longer trips, and often have a helper on long distance trips. Hence, the value assigned is:

Heavy Trucks 2 x 8.13 = $16.29

Light Trucks 2 x 6.84 = $13.68

TABLE IX

TRUCK DRIVER'S AVERAGE HOURLY WAGE*

Heavy		Light	
High	$9.75	High	$9.18
Low	$6.50	Low	$4.50
Average	$8.13	Average	$6.84

*July, 1980 figures

SOURCE: 1981 Update to the User Benefit Program

VII. INPUT DATE FOR ACCIDENT COSTS

The information required for these calculations were obtained from the "User Benefit Cost Parameter Update", compiled in June, 1982, by Transportation Officials in Ontario. These costs were adjusted to Newfoundland figures by multiplying Ontario's cost value by a ratio of Newfoundland's average weekly wage over Ontario's average weekly wage in 1981.

The following describes the procedure and assumptions used in the calculation of Ontario's accident cost values for:

(a) Fatals

(b) Personal Injury

(c) Property Damage

A. Fatal Costs/Collision

$$43{,}000 \times 3.455 \times \frac{18{,}773.56}{18{,}773.56} = 148{,}565$$

$$2 \times \frac{148{,}565}{.955} \times 1.224 = 380{,}824.19$$

Assumptions

1. The Washington study of 1964, which placed an estimated $43,000 on lost earnings per person killed, is still applicable.

2. The average wage increase factor in Ontario from 1964 to October, 1981 was 3.455.

3. As of October, 1981, the average wage per worker was $361.03/week or $18,773.56/year. Since the equivalent value for the United States is unavailable, it is assumed that the two average wages are equal.

4. Based on 1981 MTC estimates, there are 1.224 persons killed/collision.

5. According to the Washington Study, 'future earnings' costs account for 95.5% of all costs of fatal collisions when considering man as a producer.

6. Man is a consumer as well as a producer; thus, his non-productive function is considered of equal value. In this calculation, the estimate is multiplied by a factor of 2 to account for the assumption of man as a consumer who creates a demand for goods and services.

B. Personal Injury Costs/Collision

Assumptions

1. The growth factor in wages between 1964 to 1981 was 3.455.

2. The 1964 estimate of costs per person injured in a collision was $860.

3. Based on 1981 estimates, 1.67 persons were injured per collision.

4. The average wage in Ontario in 1981 was $18,773.56 per year. It is assumed that this figure is the same for American workers.

$$\frac{\$860}{\text{Person Injured}} \times 3.455 \times \frac{1.67 \text{ persons injured}}{\text{Collision}} = \frac{\$4,962/}{\text{Collision}}$$

C. Property Damage Costs/Collision

Assumptions

1. Wage growth factor is 3.455.

2. The estimated cost per vehicle damaged in 1964 was $190.

3. 1981 MTC estimates indicated an involvement rate of 1.69 vehicles damaged per collision.

4. The average annual wage for Ontario workers in 1981 was $18,773.56 per year. This wage is assumed to be common in the United States.

$$\frac{\$190}{\text{Veh. Damaged}} \times 3.455 \times \frac{1.69 \text{ Veh. Damaged}}{\text{Collision}} = 1{,}109/\text{Collision}$$

D. Accident Cost Values for Newfoundland

Fatal Cost/Collision

$$380{,}824.19 \times \frac{340.80}{361.03} = \$359{,}485$$

Personal Injury Costs/Collision

$$4{,}962.00 \times \frac{340.80}{361.03} = \$4{,}683.96$$

Property Damage Costs/Collision

$$1{,}109.00 \times \frac{340.80}{361.03} = \$1{,}046.86$$

VIII BIBLIOGRAPHY

Reports:

Ministry of Transportation and Communications, Ontario, User Benefit Cost Parameter Update, Highway Program Development Branch, June, 1982.

Power, J.M., Vehicle Operating Costs for Input to the User Benefit Program, 1981 Update, Newfoundland Department of Transportation, July, 1981.

Acknowledgements:

Newfoundland Statistics, Confederation Building

Ultramar Ltd., St. John's, Nfld.

SYSTEM 037 — ROAD USER BENEFITS

INPUT FORM 1.

TR 3706

	JOB IDENTIFICATION
H	3706

JOB IDENTIFICATION - PRINTED ON EACH PAGE OF OUTPUT.

	FUEL COST $ / IMP. GAL			OIL COST $ / IMP QT.			TIRE COST $ / TIRE			MECHANIC'S LABOUR $ / HR.			VEH DEPRECIABLE VALUE (COST LESS TIRES)			TIME COST $/HR./PERSON			ACCIDENT COST $ / ACCIDENT		
	C	S	T	C	S	T	C	S	T	C	S	T	C	S	T	C	S	T	FATAL	INJURY	PROPERTY DAMAGE
A	•	•	•	•	•	•				•	•	•				•	•	•			

	INPUT YEARS (MAX 5)					EXEC SPLIT	TOP			SECOND			TIME COST $/HR Work	TIME COST $/HR Non-Work	% Non-Wk Trip
							NO.	HR	SPLIT	NO.	HR	SPLIT			
B													•	•	

C - CAR
S - SINGLE-UNIT TRUCK
T - TRANSPORT TRUCK

PCS DISTRIBUTIONS ADDITIONAL TO THOSE ON PCS FILE (MAX 10)

	PCS NO.	VOL. INT WHERE VOL/HR	NO OF HOURS FOR EACH VOL. INT OVER ONE YEAR									
			1	2	3	4	5	6	7	8	9	10
C												

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CODES

1. ENTER 1 FOR INPUT CHECKING ONLY
2. ENTER 1 IF PCS FILE NOT USED
3. ENTER 1 IF LINK WITH INFLATION/DISCOUNT PROGRAM OR IF PUNCHED CARD OUTPUT FOR ROAD STANDARD STUDY REQD.
4. ENTER 1 IF INTERMEDIATE OUTPUT NOT REQUIRED
5. LEAVE BLANK FOR USER BENEFIT CALCULATION
   (AS INPUT TO INFLATION / DISCOUNT PROGRAM TR 3702)
   ENTER E FOR ECONOMICS OFFICE
   (AS INPUT TO CASH FLOW PROGRAM TR 3707)
6. ENTER 1 IF PLOT OUTPUT FOR ALL PCS STATIONS REQ'D.
   ENTER 2 IF PLOT OUTPUT FOR PCS STATIONS USED REQ'D.

APPENDIX B

SURVEY EVALUATION/DISTRICTS

SURVEY, 1982

The purpose of this survey was to receive a representative Provincial response of costs in operating a vehicle in 1982. Due to the very nature of the task of selecting businesses to contact, the survey can only attempt objectivity. Subjective choice is needed to complete the study. The method to be followed is described as:

STEP 1: Obtain the latest population figures for the Province. Choose 'centres of significance' in each region. These areas are appointed on the basis of population and geographic location.

STEP 2: The centres chosen will be weighted by population in the respective cities. For example, in District 3, Gander has 37% of the population and thus will be awarded 37% of the businesses surveyed. Please note that this procedure may be impossible to follow due to the number of businesses in a centre. Hence, judgement is necessary.

STEP 3: Prepare letters and surveys to be sent.

STEP 4: Follow-up telephone calls.

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The towns/cities for this year's revision are:

(i) District I

St. John's (Metro)

(ii) District II

Burin

Fortune/Grand Bank

Marystown

Glovertown (TCH)

Clarenville

(iii) District III

Gander

Grand Falls

Windsor

Springdale

(iv) District IV

Corner Brook

Port aux Basques

St. Anthony

(v) District V

Goose Bay

Labrador City

Wabush

The update was conducted through the use of a telephone survey. To ensure response from those called, copies of the survey were sent prior to the survey date. The categories and numbers are:

(i)	Gas and Oil	9 per district
(ii)	Tire	5 per district
(iii)	Mechanic	5 per district
(iv)	Truck Costs	3 per district

Other Statistics

To obtain other statistics required in the report, Newfoundland Statistics on Floor 5, Confederation Building, will supply information as requested. Data to be obtained from this source consists of:

(i) Total Value of New Cars Bought in Nfld. in 1981

(ii) Total # of New Cars Purchased

(iii) Average Gross Weekly Wage, 1982

(iv) Average Weekly Working Hours

(v) Personal Disposable Income in Nfld. in 1981

The origin-destination survey will be needed to calculate travel time values. Manpower will supply truck driver's hourly wage.

Results:

Although an attempt to standardize survey methods was made this year, the survey was not as successful as desired. A number of weaknesses have been identified; further updates will improve on what has been proposed.

1. The circulation of survey prior to the actual interview date did not produce the intended results. Many businesses had not seen the material; hence, time was spent waiting while employees searched for the material.

2. Some of those interviewed felt that the 'representative' tires were not at all. Rather, the sales of those tires (passenger and truck) tends to be low.

3. The truck survey caused some conflict as the specifications seemed unrealistic.

4. A clearer definition of high/low grade oil is necessary. Confusion results as no clear standard is set.

5. It is important that the surveyor(s) become acquainted with the materials prior to the survey.

For example, in the tire survey, one must be sure of what "% of tire sales" indicates. In addition, a technical knowledge of vehicles is required for complete understanding.

These weaknesses are correctable. Recommendations concerning them will be made.

DISTRICTS

District I: Eastern Tip

St. John's and surrounding area

District II: East Gambo

Gambo to Whitbourne (inclusive)

District III: Central

Includes Springdale

District IV: West Coast

District V: Labrador

APPENDIX C

GASOLINE, DIESEL AND OIL PRICES

GASOLINE, DIESEL AND OIL SURVEY

Type of Gasoline	Price/Litre (incl.tax) Self-Serve	Attendant	% Gas Sales
Regular			
Super			
Unleaded			

Type of Oil	Price/Litre (incl.tax)	% Oil Sales
High Grade		
Low Grade		

	Attendant Price/Litre (incl.tax)
Diesel (Transport Trucks)	$ _____

GASOLINE (FOR AUTOS AND SINGLE UNIT TRUCKS)

Region	Avg. Cost/L Taxes Excluded Attendant		Self-Serve
I	Regular	.36	.32
	Super	-	.36
	Unleaded	.37	.34
II	Regular	.36	-
	Super	.38	-
	Unleaded	.37	-
III	Regular	.35	.33
	Super	.37	.36
	Unleaded	.37	.35
IV	Regular	.36	.34
	Super	.37	-
	Unleaded	.38	.34
V	Regular	.36	-
	Super	.37	-
	Unleaded	.38	-

DIESEL

Region	Avg. Cost/L Taxes Excluded
I	.37
II	.36
III	.36
IV	.37
V	.34

OIL COSTS

Region	High Cost/L	Low Cost/l
I	$2.65	$1.54
II	$2.39	$1.79
III	$2.67	$1.59
IV	$5.16	$1.83
V	$2.43	$1.76

APPENDIX D

TIRE COSTS

TIRE SURVEY

Tire Prices (For Passenger Cars)

Season	P205/75R14	% of Tire Sales
Summer		
Fall		
Winter		
Spring		

Tire Prices (For Trucks)

Season	800 x 16.5	900 x 20
Summer		
Fall		
Winter		
Spring		

Retread Costs

800 x 16.5

900 x 20

TIRE COST

Region	P205/75R14	800 x 16.5	900 x 20
I	78.87	105.05	236.07
Retread		70.00	124.00
II	-	-	-
III	72.86	87.33	179.50
Retread		50.00	110.00
IV	75.34	98.78	191.45
Retread		68.00	129.00
V	73.29	98.35	223.76
Retread		50.00	137.00

APPENDIX E

MECHANIC'S LABOUR COSTS

MECHANIC LABOR COST SURVEY

COMPANY:

Mechanic Labor Charge Per Hour $ _____

Number of Mechanics Employed _____

MECHANIC'S LABOUR COST

Region	Mechanic's Labour Charge (High & Low Observations)	# Mechanics Surveyed
I	30.50	18
	24.00	
II	27.00	5
	15.00	
III	30.00	22
	18.00	
IV	22.00	8
	16.00	
V	26.00	3*
	22.00	

*These numbers reflect mechanics employed in survey of five service stations/garages.

APPENDIX F

TRUCK COSTS

VEHICLE COST - 1982 MODELS

Description:

	Single Unit Trucks	Combination Unit
	2 axles, 6 wheels	4 axles, 14 wheels
Curb Weight	4,745 lbs.	25,000 lbs.
Rated GVW	14,000 lbs.	57,000 lbs.
GVW Used	12,000 lbs.	40,000 lbs.
Engine	6-cylinder	6-cylinder
Net Horsepower	145	180
Weight/Power Ratio	82	220

Floor Cost (Excl.tax and Licence)

Single Unit $ _____

Combination (Tractor Trailer) $ _____

SINGLE UNIT AND TRANSPORT TRUCK COSTS

Single Unit Trucks	$13,250	Transport Trucks	$80,000
	$16,963		$80,000
Average	$15,106.50		$80,000

NOTE: Number of Observations is not equal to number of districts since truck prices for dealers outside of St. John's will be the same as associated dealerships in the City.

APPENDIX G

ORIGIN-DESTINATION SURVEY

PROVINCE OF NEWFOUNDLAND
DEPARTMENT OF TRANSPORTATION AND COMMUNICATIONS

ORIGIN – DESTINATION SURVEY

LOCATION	DATE	SHEET No.	HOUR ENDING
3 4	5 6 7 8 9 10	11 12 13	14 15 16 17

OUT OF PROVINCE	TYPE OF VEHICLE	No IN VEHICLE	WHERE DID THIS TRIP BEGIN? (LAST STOP/ORIGIN)	TYPE OF ESTABLISHMENT AT ORIGIN	WHERE WILL THIS TRIP END? (NEXT STOP/DESTINATION)	TYPE OF ESTABLISHMENT AT DESTINATION	PROPOSE OF TRIP	HOME BASE OF VEHICLE	LICENCE PLATE No.
18	19 20	21 22	23 24 25 26 27 28	29 30 31	32 33 34 35 36 37	38 39 40	41	42 43 44 45 46 47	48 49 50 51 52 53 54
18	19 20	21 22	23 24 25 26 27 28	29 30 31	32 33 34 35 36 37	38 39 40	41	42 43 44 45 46 47	48 49 50 51 52 53 54
18	19 20	21 22	23 24 25 26 27 28	29 30 31	32 33 34 35 36 37	38 39 40	41	42 43 44 45 46 47	48 49 50 51 52 53 54
18	19 20	21 22	23 24 25 26 27 28	29 30 31	32 33 34 35 36 37	38 39 40	41	42 43 44 45 46 47	48 49 50 51 52 53 54
18	19 20	21 22	23 24 25 26 27 28	29 30 31	32 33 34 35 36 37	38 39 40	41	42 43 44 45 46 47	48 49 50 51 52 53 54
18	19 20	21 22	23 24 25 26 27 28	29 30 31	32 33 34 35 36 37	38 39 40	41	42 43 44 45 46 47	48 49 50 51 52 53 54
18	19 20	21 22	23 24 25 26 27 28	29 30 31	32 33 34 35 36 37	38 39 40	41	42 43 44 45 46 47	48 49 50 51 52 53 54
18	19 20	21 22	23 24 25 26 27 28	29 30 31	32 33 34 35 36 37	38 39 40	41	42 43 44 45 46 47	48 49 50 51 52 53 54

OUT OF PROVINCE

1 Other Canadian
2. American

TYPE OF VEHICLE

1. 4 cylinder passenger car
2. 6 cylinder passenger car
3. 8 cylinder passenger car
4. Diesel passenger car
5. 4 cylinder passenger car with trailer
6. 6 cylinder passenger car with trailer
7. 8 cylinder passenger car with trailer
8. Diesel passenger car with trailer
9. Taxi
10. Light 2 - axle private vehicle (non auto)
11. Light 2 - axle commercial vehicle (non auto)
12. Heavy 2 - axle (dual rear tires)
13. 3 - axles single unit
14. 3 - axles trailer
15. 4 - axles
16. 5 - axles
17. Over 5 - axles
18. Buses
19. Motorcycles

TYPE OF ESTABLISHMENT

03. Airport
06. Ferry or boat
09. Bus depot
10. Residential
20. Retail
21. Highway commercial
30. Wholesale
40. Office building and public service
51. Recreational – cabin
52. Recreational – provincial park
53. Recreational – hotel or lodge
54. Hunting/fishing
55. Camping
60. Manufacturing (industrial)
70. Construction site
80. Restaurant/club/entertainment centre
90. Agriculture
100. Forest materials site
110. Wharf (fish)
120. Food processing
130. Mining and related
140. Hospital/doctor/dentist
150. Other

PROPOSE OF TRIP

1. Work
2. Personal business
3. Medical/dental/legal
4. School (student)
5. Social/recreation
6. Change mode of travel
7. Shopping
8. Hunting/fishing
9. Other

HOME BASE OF VEHICLE

1 Origin
2. Destination

IF NEITHER O OR D SPECIFY CITY OR TOWN, OR OTHER PROVINCE OR STATE.

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